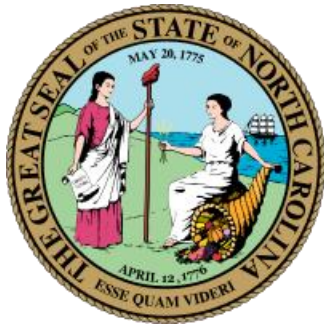


FirstNet Data Collection

Initial Consultation Meeting with North Carolina



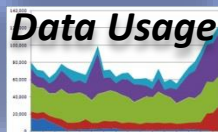
Need State Specific Inputs



Plan Options



Training



Users

FirstNet Consultation

Deployables



Hardening



Security



Coverage Objectives



Devices

Applications



Core Network

Prioritization

\$7B



Excess Capacity Revenue



Fees

User, Core, Infrastructure Lease



Deployment Costs



Operations & Maintenance Costs



PS Features

Priority, Security, Hardening, etc.



Hardening Costs

Deployment Schedule



Available Devices

Core Design



Cost Estimates

Baseline Coverage



Excess Capacity Valuation



Adoption Estimates

FirstNet Acquisition

Stakeholder Inputs Critical to Inform FirstNet Planning



Coverage

Where?

- Where Needed (Objectives)
- Different Device Types
- Throughput levels

Capacity

How Much?

- # of Users and Devices
- Application Usage
- Data Consumption

FirstNet Financial Team

- Request for Proposals (RFP) Development/Evaluation
- Economic Modeling



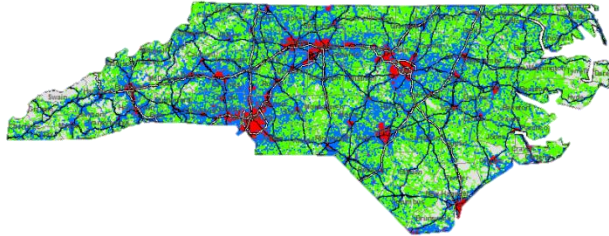
FirstNet Engineering Team

- RFP Development/Evaluation
- Core, radio access network (RAN) and Devices

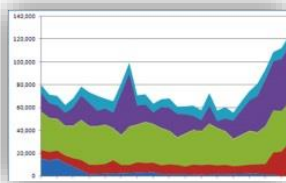
Data Collection Categories



Coverage Objectives



- Coverage
- Phased Deployment
- Applications
- Data Usage



Capacity

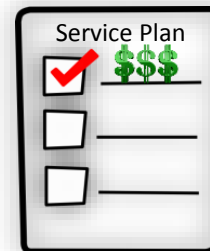
North Carolina

Users and Operations



- Public Safety Entity Info
- Devices
- Operational Areas

- Current Service
- Procurement Vehicles
- Service Plans



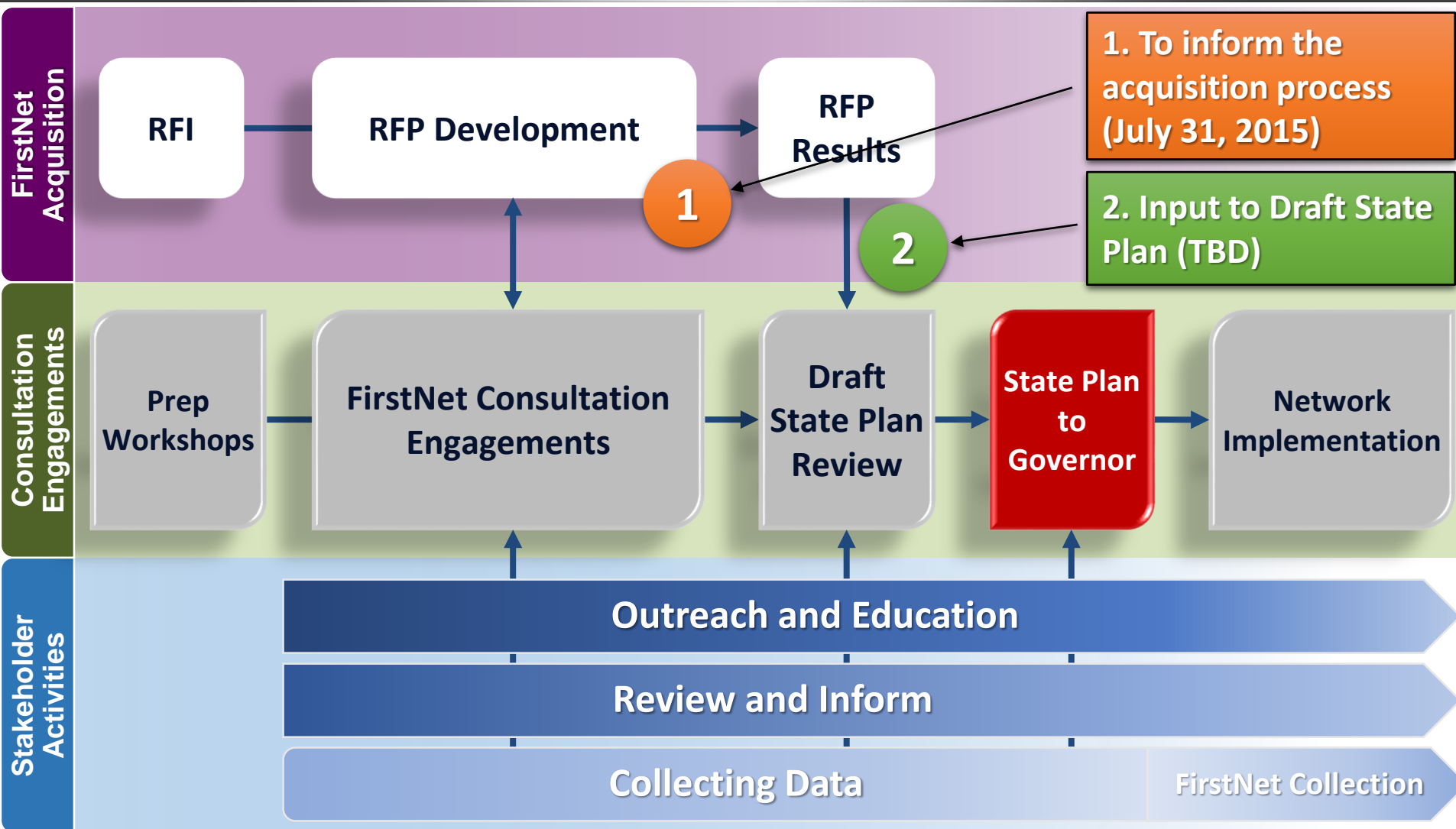
Current Service

Guiding Principles for Data Requests



- **Critical Data**: only gather critically essential data
- **When Needed**: collect data close to when it will be used to ensure accuracy
- **Pre-populate**: where possible, FirstNet will collect as much data as possible from available sources for editing and validation
- **Specify Deliverables**: identify required deliverable formats, not necessarily specific tools and processes
- **Be Flexible**: allow flexibility given different stakeholders' existing use of tools, processes and resource constraints
- **Get Feedback**: socialize the process before formalizing
- **Advance Notice**: identify schedule, process and tools as early as possible for stakeholders to plan accordingly
- **Local Knowledge**: rely on stakeholder knowledge to help prioritize data collection

Data Collection Milestones



(1) Coverage Objectives



Coverage Objectives vs. Coverage Maps



- **What is a Coverage Objective?**

Targeted areas within a state/territory/district identifying where FirstNet coverage is projected to be needed

- **What is a Coverage Map?**

A predicted coverage footprint showing where devices can reliably communicate with each other above a minimum data rate

Coverage Objectives are NOT Coverage Maps

FirstNet's Coverage Objective Goals



- **GOAL:** *Come up with a consistent, nationwide starting point to objectively identify Public Safety's coverage desires -- update through Consultation*
- 1. Set a FirstNet Nationwide Coverage Objective Baseline as a starting point
 - ☐ Identify initial coverage objectives relevant to Public Safety's desires
 - ☐ Develop a systematic, consistent and objective approach applied nationwide
 - ☐ Leverage feedback from the Office of Emergency Communications' (OEC's) Coverage Workshops
 - ☐ Generate maps to document the starting point
- 2. Facilitate coverage discussion for a phased build out
 - ☐ Include additional data to tailor needs for each state
 - ☐ Modify based on stakeholder input and feedback

FirstNet Envisions Continued Discussion and Revisions on Coverage Beyond Delivery of a State Plan

Starting Coverage Objectives Data

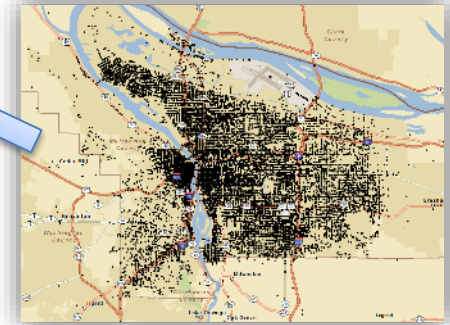


1. Public Safety User Population *(Source: HSIP, OEC provided)*

- **Public Safety User Density** based on jurisdiction (OEC data to start)
- **Common response areas (CAD data)** – as it's made available with State collection

2. Public Safety High Risk / Areas of Interest *(Source: HSIP)*

- **Key facilities** – PS agencies, corrections, airports, EOCs, hospitals, PSAPs, schools, etc.
- **Critical infrastructure** – manufacturing, energy, dams, etc.
- **Large Public Venues** – stadiums, theme parks, malls
- **Other major event locations** – if provided with initial consultation submission
- ***Area for feedback** – tourist/recreational destinations (parks, hiking, waterways, etc.)



3. US Population *(Source: 2012 US Census)*

- **Population density**

4. Developed Areas / Buildings *(Source: 2006 National Land Cover Database)*

- **Dense / Medium / Light / Open / None**

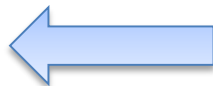
5. Roadways *(Source: Federal Highway Administration)*

- **National Highway System**
- **Average Daily Traffic Counts** to identify significant secondary roadways

6. Tribal Land

7. Rural Metrics

8. Federal Land



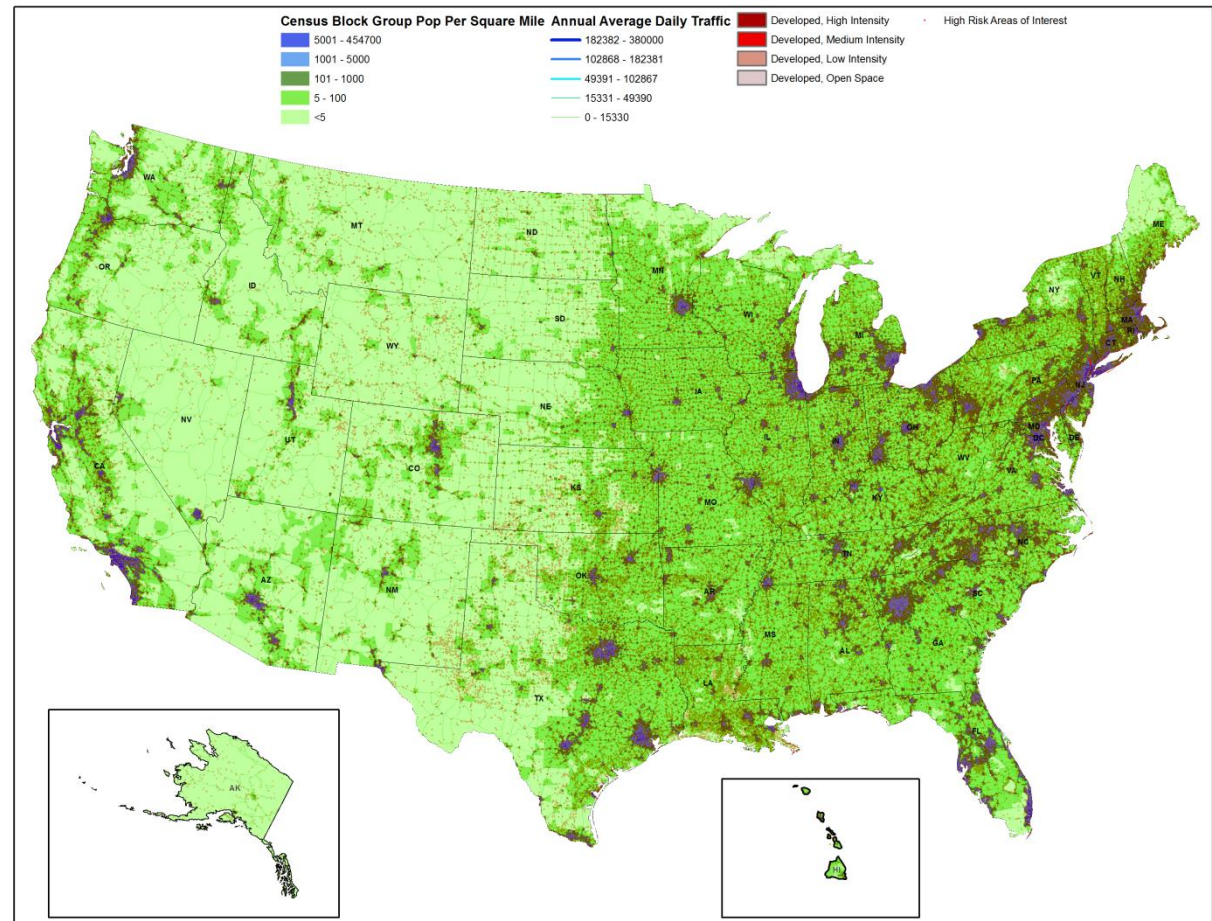
These will be incorporated with additional considerations (i.e. FirstNet Rural milestones) or via separate consultation (i.e. Federal)

Nationwide Approach



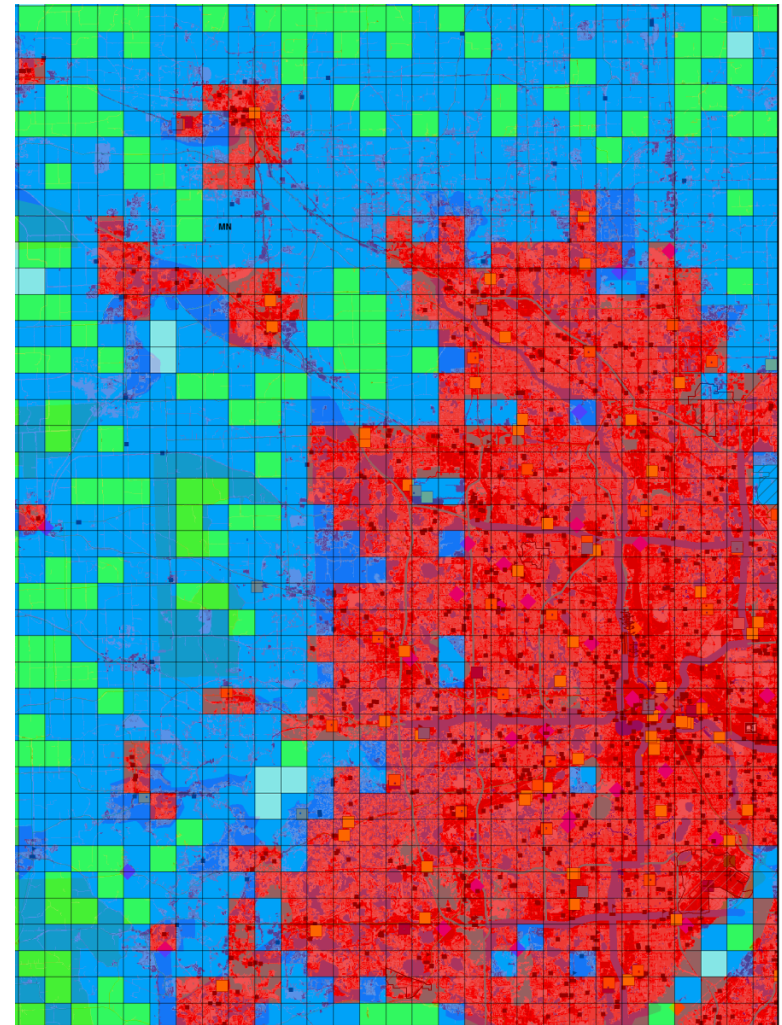
1. Employee count of Law Enforcement (LE), Fire, EMS agencies
2. Public Safety High Risk / Areas of Interest
3. US Population
4. Developed Areas / Buildings
5. Roadways / Avg. Daily Traffic

Resulting Combined Map =>



Converting Data into Coverage Objectives

1. Employee count of Law Enforcement, Fire, EMS agencies
 2. Public Safety High Risk / Areas of Interest
 3. US Population
 4. Developed Areas / Buildings
 5. Roadways
- A lot of data in different formats
 - Points, lines, polygons, etc.
 - To evaluate these broad datasets, applied a 1x1 mile grid for uniformity
 - Evaluated all data by grid to:
 - 1) Identify areas that had data of interest to Public Safety
 - 2) Show concentration areas



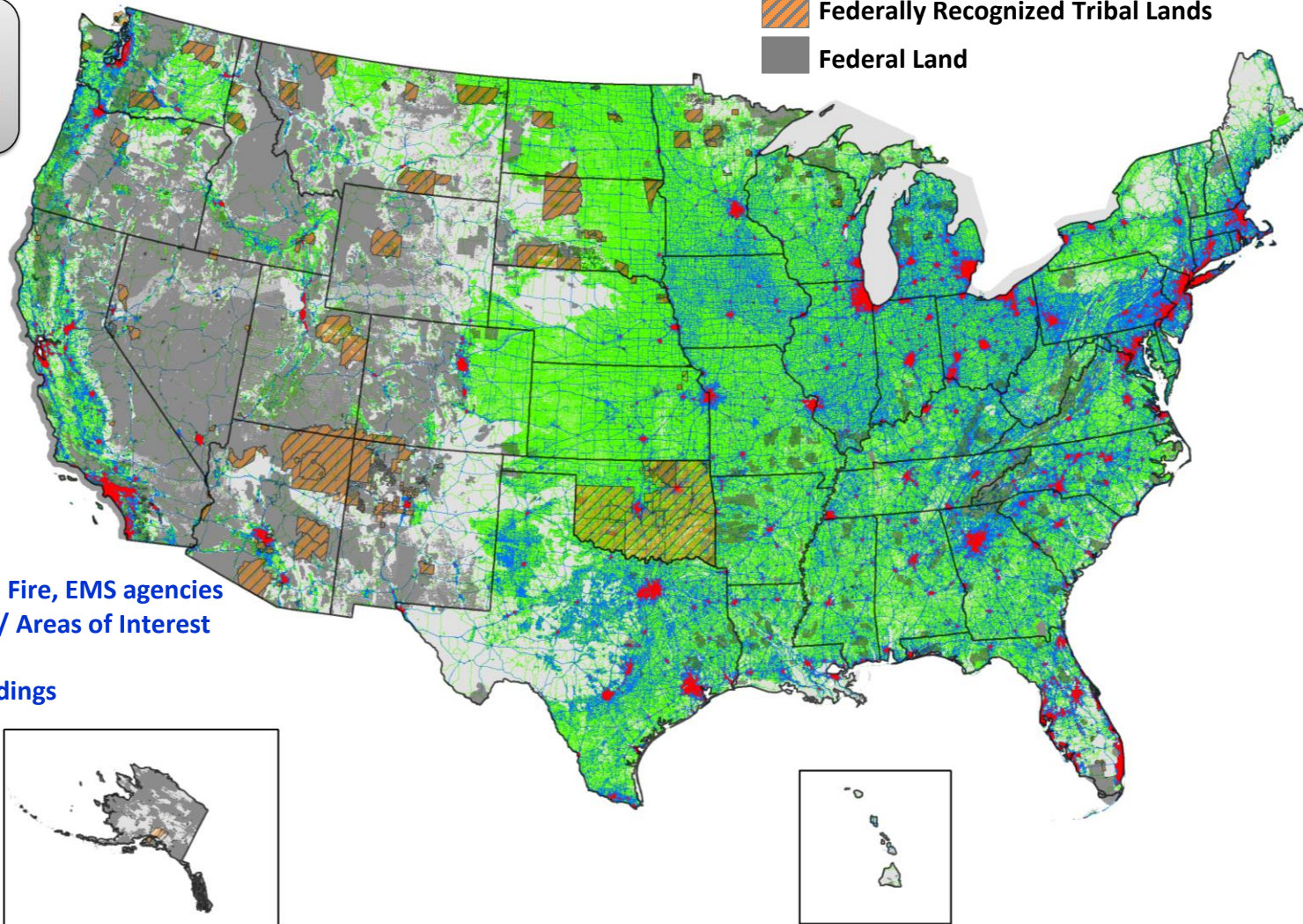
Nationwide Coverage Objective



Legend:

- High Concentration
- Moderate Concentration
- Low Concentration

- Federally Recognized Tribal Lands
- Federal Land

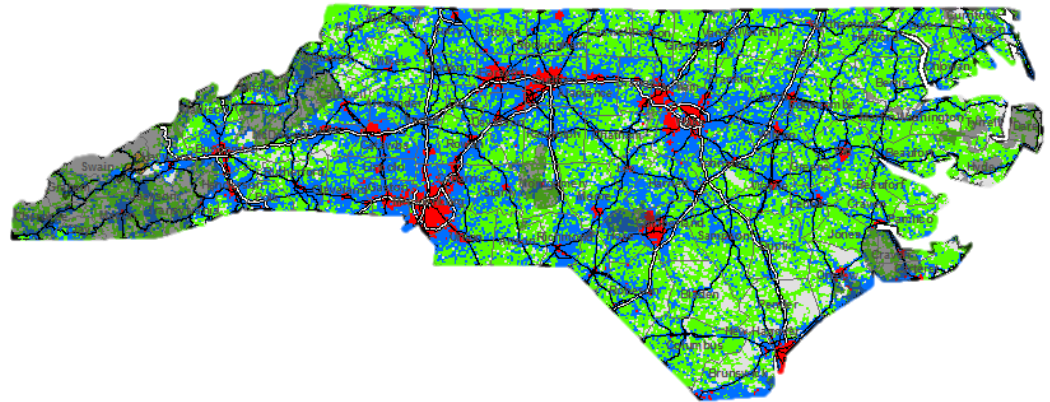


1. Employee count of L.E., Fire, EMS agencies
2. Public Safety High Risk / Areas of Interest
3. US Population
4. Developed Areas / Buildings
5. Roadways

Results for North Carolina



1. Employee count of L.E., Fire, EMS agencies
2. Public Safety High Risk / Areas of Interest
3. US Population
4. Developed Areas / Buildings
5. Roadways



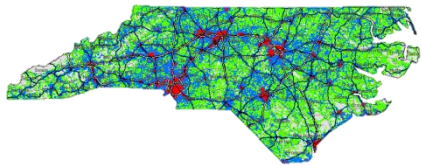
Legend:

- High Concentration
- Moderate Concentration
- Low Concentration

- Federally Recognized Tribal Lands
- Federal Land

Where are Changes Needed?

Starting Coverage Objective

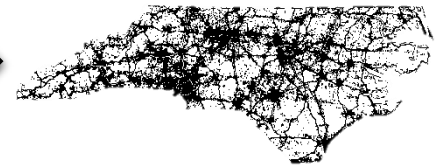


State to modify during consultation based on, for example:

- End User Local Knowledge
- Calls for Service Data
- Tourist/Recreational Areas
- Evacuation Routes
- Large Temporary Venues
- Mass Transit Routes
- Highly Navigable Waterways
- Etc.

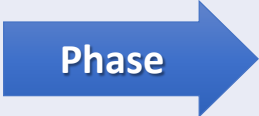

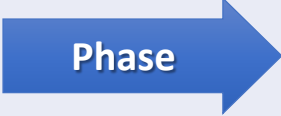

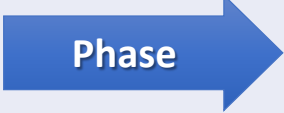


Modified Coverage Objective

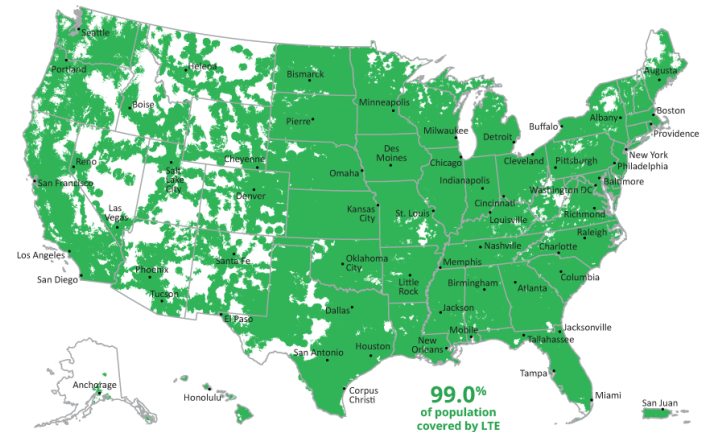


How Should FirstNet Phase a Deployment?



Coverage Objective	Deployment Phase
• Objective 1	Phase 
• Objective 2	Phase 
• Objective 3	Phase 
• Objective 4	Phase 
• Objective 5	Phase 

Commercial LTE Build Out 2010-2014



Aggregate LTE Coverage 2Q 2014

Network Intelligence Provided By



All coverage illustrated is derived from public information provided by terrestrial mobile operators. Not all operators choose to market coverage information. Standards for coverage representation vary among operators. Mosaik Solutions provides no warranty to the accuracy of the data. Analysis reflects 2010 U.S. Census Data.

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(2) Users and Operations



Estimate Total Eligible Users



Totals *(Estimated)*

Discipline	# Agencies	# Users	# Devices
LE	250	15,000	22,500
Fire	300	20,000	20,000
EMS	125	5,000	7,500
Emergency Mgmt	50	2,000	4,000
Transportation	25	3,500	3,500
Other	450	25,000	12,500

Surveyed Agencies

# Agencies	# of Users	# Devices
50	2,000	3,000
75	4,000	4,000
25	1,000	1,500
10	300	600
5	750	750
100	5,000	2,500

* Sample data only

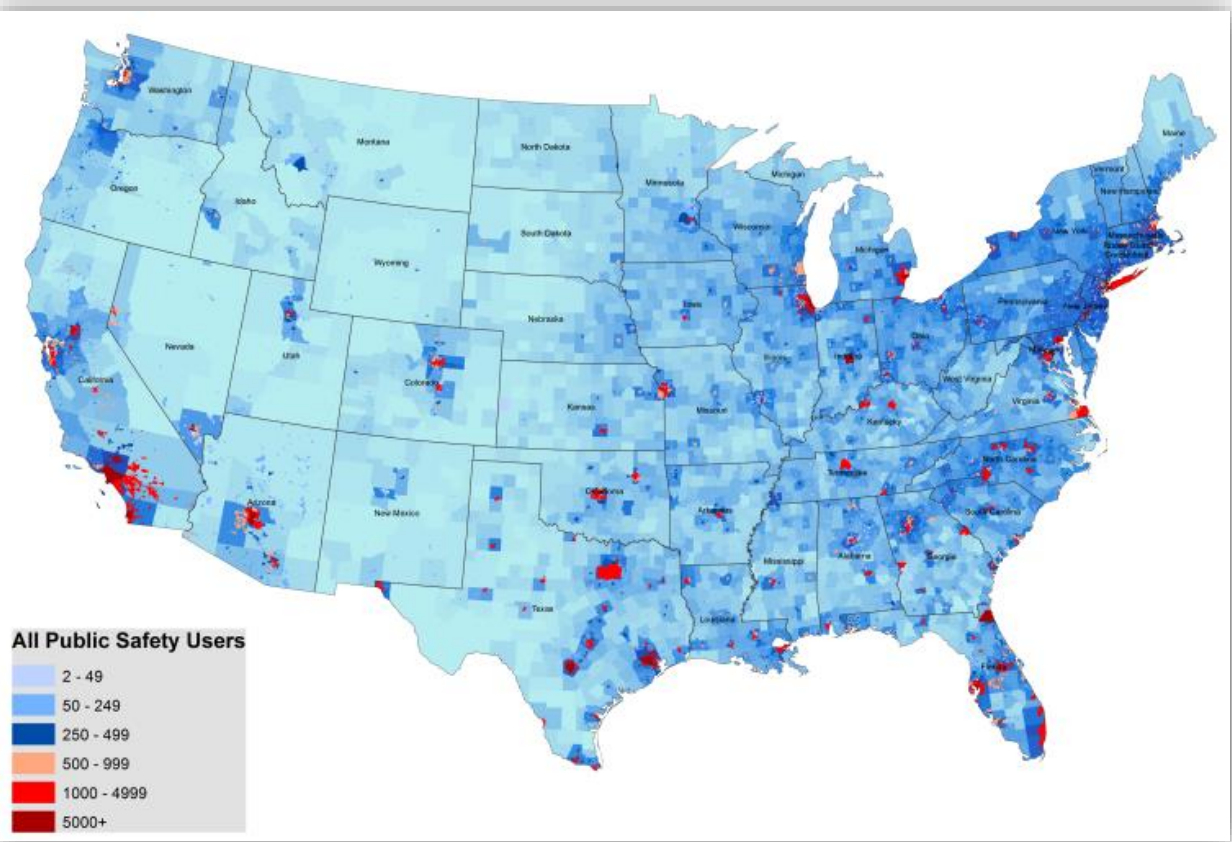


Estimate Operational Areas

Totals (Estimated)

Discipline	# Agencies	# Users	# Devices
LE	250	15,000	22,500
Fire	300	20,000	20,000
EMS	125	5,000	7,500
Emergency Mgmt	50	2,000	4,000
Transportation	25	3,500	3,500
Other	450	25,000	12,500

User Density by Operational Area



* Sample data only

(3) Capacity Planning



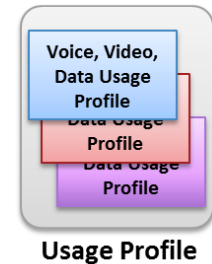
Application Survey

- Current application usage
- Frequency of use
- Desired applications
- Estimate of data consumption



Traffic Profiles (Case Studies)

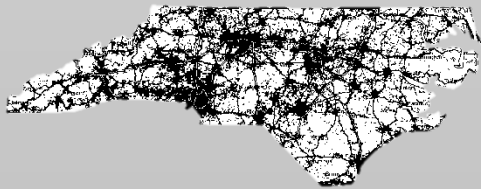
- Quantify usage for specific use cases
- Vary by
 - Incident Types
 - Discipline
 - Area
- Important Metrics
 - Number of responders and devices
 - Type of responders (discipline)
 - Location of responders
 - Variability by incident types and scale
 - Upload vs. Download
 - Data usage by application
 - Time data sent



Law Enforcement User
xxx kbps voice calls
xxx kbps video
xxx kbps other data
xxx kbps total usage

Combining All the Inputs

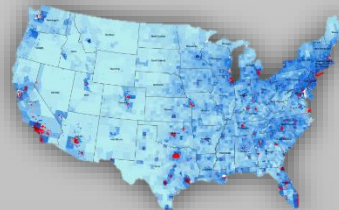
(1) Coverage Objectives



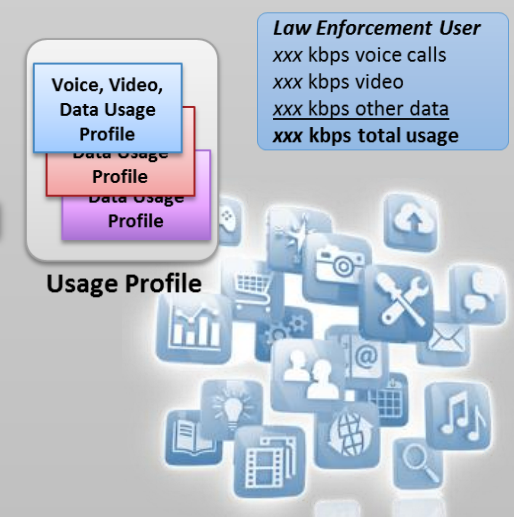
(2) Users & Operations

Totals (Estimated)

Discipline	# Agencies	# Users	# Devices
LE	250	15,000	22,500
Fire	300	20,000	20,000
EMS	125	5,000	7,500
Emergency Mgmt	50	2,000	4,000
Transportation	25	3,500	3,500
Other	450	25,000	12,500



(3) Capacity Planning



**==> Inputs to RAN Design and State Plan
Representative of State's Needs**

(4) Current Service / Procurement



How do Agencies do Business Today?



- Identify major procurement vehicles / options
- Identify different service plan types and costs
- Capture any specialized services
 - Cells on Light Trucks (COLTs)/Cells on Wheels (COWs), network interfaces/customization, etc.
- Identify current barriers



Data Collection Wrap-up



Data Collection Elements Summary



Data Categories		Description	Survey	Other Method
1. Coverage		Identify desired coverage and proposed deployment phases within the State/Territory		
1a.	Coverage Objectives	Identify State/Territory coverage by developing a baseline or providing feedback and changes to the FirstNet baseline		X
1b.	Phased Deployment Approach	Provide recommendations on targeted areas or objectives for each deployment phase (suggest a minimum of 5 phases)		X
2. Users and their Operational Areas		Gather information on the eligible user base and their respective operational areas		
2a.	Public Safety Entity ("PSE") ¹ Info, Personnel Counts	Basic PSE demographics: entity name, discipline, location, POC, total personnel. Please provide the same information for those entities that qualifying PSEs wish to designate as PSEs within the State/Territory (including Tribal lands) under the terms of the Act ² .	X	
2b.	Devices - Counts and Types	Number and type of agency issued voice/data wireless devices used by PSE personnel, estimates of usage growth and use of personally owned devices	X	
2c.	Users and Devices Summary	Estimate the total eligible user base within the State/Territory (including Tribal lands). Use the device/user ratio from surveyed data to estimate the total number of currently deployed devices.		X
2d.	Operational Areas	Provide geographic areas of responsibility as well as common response areas for each PSE (as available)		X
2d-i.	i. User maps based on jurisdiction	Baseline maps of user counts distributed across their respective areas of responsibilities		X
2d-ii	ii. Common response areas (Calls for Service data)	As available, provide calls for service response data from eligible PSEs, analyzing and mapping the results to show common and critical response areas		X
3. Capacity Planning		Estimate current application and data usage		
3a.	Application Usage	Data gathering on basic application usage to identify what PSEs are currently using, frequency of use, and projected growth. This information may also be used to estimate network capacity.	X	
3b.	Data Usage (Traffic Profiles)	Targeting a small subset of PSEs representing the different demographics of the State/Territory, capture data and conduct analyses to quantify how much data is used by different PSEs. This sampling of data could be gathered and analyzed, for example, by different size and scope of incident responses or planned events, by discipline types, by urban vs. rural, comparing uplink vs. downlink, etc. Supplemental information on planned growth, launch of new applications, limitations of current usage, etc. are all important to note while developing representative traffic profiles.		X
4. Current Providers / Procurement		Information on current service provider's plans, procurement vehicles, and barriers to adoption		
4a.	Procurement vehicles / restrictions	Provide how mobile services are procured today, contract duration, and what restrictions may exist with leveraging different procurement options	X	
4a.	Plan types / costs	Identify different plan types, periodicity, and their associated costs	X	
4a.	Any specialized services provided?	Provide additional services supplied (e.g., network/system interfaces, SLAs, unique APNs, separate VLANs, COLTs/COWs)	X	
4b.	Barriers	Identify current barriers that have limited or prevented fully operationalizing mobile data	X	
5. State Plan Decision		Document the process and potential barriers for State Plan decision-making		
5a.	Document State Plan Review Process	Document the State Plan review decision-making process, associated timelines, responsibilities, and windows of availability for delivering a state plan for proper FirstNet planning when scheduling the delivery of the final state plan to the Governor.		X

Different Methods of Collection



Data Categories	Description	Survey	Other
1. Coverage	Identify desired coverage and proposed deployment phases within the State/Territory		
1a. Coverage Objectives	Identify key coverage objectives, including a timeline or proposed timeline for deployment	X	
1b. Phase Deployment Approach	Provide recommendations on targeted areas or objectives for each deployment phase (e.g., a timeline of phases)	X	
2. Users and their Operational Areas	Gather information on the eligible user base and their respective operational areas		
2a. Public Safety Entity ("PSE") Info, Personnel Counts	Identify the demographics, entity name, discipline, location, POC, user personnel. Please provide the same information for those entities that are not yet established or that are in the process of being established	X	
2b. Devices - Counts and Types	Provide the total of eligible users within the State/Territory (including Tribal lands). Use the map/layer info from coverage data to estimate the total number of currently deployed devices	X	
2c. Users and Devices Summary	Provide geographic areas of responsibility for each as currently required under the state POC law	X	
2d. Operational Areas	Provide maps of user areas distributed across their respective areas of responsibility	X	
2e. User maps based on jurisdiction	As available, provide data for emergency response time from eligible POC, including and mapping the POC to state agencies and other response areas	X	
3. Capacity Planning	Estimate current application and data usage		
3a. Application Usage	Identify current or future application usage to identify when data use currently using frequency of use and projected growth. This information may also be used to estimate current capacity	X	
3b. Data Usage (Traffic Profiles)	Identify current or future data usage to identify when data use currently using frequency of use and projected growth. This information may also be used to estimate current capacity	X	
4. Current Providers / Procurement	Information on current service provider's plans, procurement vehicles, and barriers to adoption		
4a. Procurement vehicles / restrictions	Provide how mobile services are procured today, current duration, and what restrictions may exist in procuring additional procurement options	X	
4b. Plan types / costs	Identify different plan types, periodicity, and their associated costs	X	
4c. Any specialized services provided?	Provide additional services supported (e.g., network/voice services, SIM, unique WPA, separate billing, etc.)	X	
4d. Barriers	Identify current barriers that have limited or prevented fully operationalizing mobile data	X	
5. State Plan Decision	Document the process and potential barriers for State Plan Decision-making		
5a. Document State Plan Review Process	Document the State Plan review process, including timelines, responsibilities, and timeline of the State Plan review process	X	

Survey

Other Method

Sample Questions & Excel Template

- 2a: Public Safety Entity Demographics
- 2b: Device Counts/Types
- 3a: Application Usage
- 4a, 4b: Info on Current Service / Procurement

Customized Process and Deliverables

(Maps, Word/PPT/PDF)

- 1a: Coverage Objectives (map) and annotations
- 1b: Phase Build Out Approach (Word/PPT)
- 2c: Users and Devices Summary (Excel)
- 2d: Operational Areas (map)
- 3b: Data Usage (Word/PPT/PDF)
- 5a: Document State Plan Review Process (Word/PPT/PDF)

Summary of Data Collection



❑ **What:** 5 Data Collection Categories

1. Coverage Objectives
2. Users and Operational Areas
3. Capacity Planning
4. Current Service / Procurement
5. State Plan Review Process

Questions, issues, requests for support, etc. can be submitted to:

datacollection@firstnet.gov

❑ **When:** Two Main Due Dates

1. July 31 – Inputs to inform acquisition (*prioritize as needed, collection to date, estimates*)
2. TBD – Inputs to Draft State Plan (*more detailed, refined, analyzed data*)

❑ **Where:** To be submitted to FirstNet repository

- In work; details to be provided

❑ **How:** State/Territory to determine most appropriate approach

- FirstNet Data Collection spreadsheet to be used as a guide
- Various tools can be used to collect desired data
- Consider different strategies for the two deadlines and different data types


Meeting Evaluation



We want to hear from you!

- How was the meeting?
- What did you like?
- What can we improve?

Please provide us with your valuable feedback by completing your evaluation.



First Responder Network Authority
Initial Consultation Evaluation Form

Please answer the following questions about your experience in this Initial Consultation Meeting according to the scale below:

	1	2	3	4	5
	Strongly Disagree	Somewhat Disagree	Neutral	Somewhat Agree	Strongly Agree
	1	2	3	4	5
1. The Initial Consultation Meeting met my expectations.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Comments:					
	1	2	3	4	5
2. This initial consultation meeting improved my knowledge of FirstNet and the processes ahead of us.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Comments:					
	1	2	3	4	5
3. The initial consultation presentations and materials were clear and easily understood.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Comments:					
	1	2	3	4	5
4. I have a better understanding of the roles and responsibilities of FirstNet and my state/territory in the consultation process.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Comments:					
	1	2	3	4	5
5. The detailed discussion about users was helpful.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Comments:					
	1	2	3	4	5
6. The detailed discussion about coverage was helpful.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Comments:					

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FirstNet[®]



Thank You

